

IDENTIFICATION OF FACTORS THAT CONTRIBUTE TO UNDERUTILIZE OF LIFEJACKET BY FISHERMEN OF EAST COAST OF PENINSULAR MALAYSIA

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Abstract. The rate of fisherman drowns and missing in Malaysia every year are worrying. The drown and missing cases are believed due to not using the lifejacket carried on-board. The objective of this study is to identify factors that contribute to the underutilise of lifejacket by fishermen in Malaysia. This research was conducted in four steps. The first step was to conduct the literature review of factors that contributed to underutilisation of lifejackets. The second step was to develop the survey questionnaire based on the identified factors. The third step was data analysis, which comprised of variance and factor analysis. The fourth step was the result of the analysis. Literature review had identified four factors as follows: too hot, uncomfortable, bulky, and faith in swimming abilities. These factors were then used to develop 21 questionnaires by deriving the sub-factor and items for each factor. The Principle Axis Factor Analysis was used to analyse the result of the survey and had identified and renamed the four factors as follows: condition of lifejacket, awareness on using lifejacket, faith on swim ability and uncomfortable. As for the conclusion, the features that caused the under utilize of lifejackets by fishermen are the condition of lifejacket, awareness on using lifejacket, faith on swim ability and uncomfortable.

Keywords: lifejacket, under utilise, safety

Background

Commercial fishing has been one of the most dangerous occupations due to the uncertainty of weather, work far from shore, and hard to get any assistance during emergency. They risk related to this job are many such as man overboard, vessel's technical problem, and heavy weather.

According to finder.com.au, the commercial fisherman is at top of the list of the most dangerous job in Australia in 2013 (Chris Ison Rockfishing, 2013; Elizabeth Barry, 2017). The job is also 17 times more dangerous than the miner. In Malaysia, search and rescue cases conducted by the Malaysian Maritime Enforcement Agency (MMEA) involving lost of lives at sea from 2006 to 2015 is 553 cases, which comprise of 34% of the total 1636 cases (MMEA, 2015). Most of the lost of lives at sea cases are believe related to fishing activities. Other cases are medical evacuation, distress call from ships, and ship and boat incidents. The local fishermen that involves with incident from 2006 to 2015 is 132 persons, which 111 saved, 13 drown and 8 lost (MMEA, 2015). The comparison of cases between ships, tug boats, ferries, and boats (fishing boats and recreational boats) from 2006 to 2015 shows that the local fishing boat is the main contributor in the ships and boat incidents category with 21 cases, which is 61% followed by tug boats (27%) and sand mining vessel (12%) (MMEA, 2013, 2014, 2015). The aforementioned statistics related to commercial fishing is quite alarming. One of the factors that believed contributed to the drown and lost at sea statistic is the underutilisation of lifejacket by fishermen. Therefore, the objective of this research is to investigate and identify factors that cause lifejacket to be underutilized by fishermen in Malaysia and to propose the features of lifejackets that would address the issue.

Methodology

The overall research activities are shown in Figure 1. The detail explanation of each step is given in the following paragraphs.



Figure 1: The flow chart of the research activities

The first step is to conduct a literature review to identify factors that contribute to underutilize of lifejacket by fishermen. Then the identified factors are filtered by referring it to the local fishermen. This is because, the identified factors may come from another country, which have a different climate and culture and may not applicable in Malaysia. The second step is to develop the survey questionnaire based on the identified factors. Sub-factors and item (question) for each sub-factor is developed. The minimum of two questions for each sub-factor. Five-point Likert-scale is used as the standard response of the survey (Likert, 1932). In the third step, pilot test was conducted to test the reliability of the questions. Upon received satisfying result, the step 4 full survey is conducted. Step 5 is the data analysis on the response of the survey. Step 6 is the final result.

Result and Discussion

Prior to the full survey, pilot test was conducted to 10 fishermen in district Kuala Terengganu to test the reliability of the questions prepared. The result of Cronbach's Alpha gained from the test was 0.622, which is within the acceptable range of reliability (Piaw, 2012). After that, full survey was conducted to fishermen community in Duyong Island and Ketam Island of district Kuala Terengganu . The population of the registered coastal fishing vessel (Class A) at the place was 113 persons. Therefore, the sample size of the survey is 86 (Ahmad Fuad, Abd Kader, Ahmad, & Abdul Malik, 2014). However, the number of response received was 87. This is because during the period of the survey, some of the vessel went out for fishing and it was hard to meet each listed vessel. The result of all 21 questions are shown below. 100% of respondent agree and strongly agree with the statement number 6 "wearing lifejacket limits movement". 100% respondent agree and strongly agree with the statement Statement number 7, "I feel uncomfortable wearing lifejacket". 83% of the respondent agree and strongly agree with statement number 8, which "lifejackets are heavy and not streamline with the body, thus limiting movement". Statement 6, 7 and 8 are related to wearing thick lifejacket that limits the movement of user. For the statements number 10, 11 and 12, 100% of the respondent agree and strongly agree that user refuse to use a bad condition lifejacket. Therefore, lifejackets should be properly maintained to encourage its usage. 87% of the respondent agree and strongly agree with statement number 14, which "People think that wearing lifejacket would tarnish the masculine and manhood image". This relates to the attitude of user, which give more priority to image and ego rather than safety. 82% of the respondent choose agree and strongly agree to statement number 1, which "Thick lifejacket may cause user to sweat heavily". This is highly relevant with user from tropical climate country such as Malaysia would sweat heavily by wearing lifejacket. 79% of the respondent agree and strongly agree with statement number 15 "High confidence in swim-ability would cause user reluctant to wear lifejacket".

Table 1: Response for question no. 1 "Thick lifejacket may cause user to sweat heavily"

Scale	Frequency	Percent	Cumulative Percent
Disagree	3	3.4	3.4
Undecided	11	12.6	16.1
Agree	56	64.4	80.5
Strongly Agree	17	19.5	100.0
Total	87	100.0	

Table 2: Response for question no. 2 “Lifejacket to suitable to wear during noon time”

Scale	Frequency	Percent	Cumulative Percent
Undecided	9	10.3	10.3
Agree	48	55.2	65.5
Strongly Agree	30	34.5	100.0
Total	87	100.0	

Table 3: Frequency table for question no. 3 “Type of material used to construct lifejacket cause heat to be trapped between body and lifejacket.”

Scale	Frequency	Percent	Cumulative Percent
Undecided	15	17.2	17.2
Agree	61	70.1	87.4
Strongly Agree	11	12.6	100.0
Total	87	100.0	

Table 4: Frequency table for question no. 4 “Using vest type lifejacket that is tight may cause the user hard to breath”

Scale	Frequency	Percent	Cumulative Percent
Disagree	11	12.6	12.6
Undecided	41	47.1	59.8
Agree	35	40.2	100.0
Total	87	100.0	

Table 5: Frequency table for question no. 5 “Using lifejacket may cause difficulty to user to move freely on boat or ship”

Scale	Frequency	Percent	Cumulative Percent
Undecided	5	5.7	5.7
Agree	65	74.7	80.5
Strongly Agree	17	19.5	100.0
Total	87	100.0	

Table 6: Frequency table for question no. 6 “wearing lifejacket limits movement”

Scale	Frequency	Percent	Cumulative Percent
Agree	57	65.5	65.5
Strongly Agree	30	34.5	100.0
Total	87	100.0	

Table 7: Frequency table for question no. 7 “I feel uncomfortable wearing lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Agree	65	74.7	74.7
Strongly Agree	22	25.3	100.0
Total	87	100.0	

Table 8: Frequency table for question no. 8 “lifejackets are heavy and not streamline with body, thus limiting movement”

Scale	Frequency	Percent	Cumulative Percent
Undecided	14	16.1	16.1
Agree	68	78.2	94.3
Strongly Agree	5	5.7	100.0
Total	87	100.0	

Table 9: Frequency table for question no. 9 “It is uncomfortable wearing vest/dress type lifejacket on boat”

Scale	Frequency	Percent	Cumulative Percent
Disagree	7	8.0	8.0
Undecided	40	46.0	54.0
Agree	40	46.0	100.0
Total	87	100.0	

Table 10: Frequency table for question no. 10 “People do not like to use worn-out lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Undecided	10	11.5	11.5
Agree	56	64.4	75.9
Strongly Agree	21	24.1	100.0
Total	87	100.0	

Table 11: Frequency table for question no. 11 “People do not like to use molded lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Agree	42	48.3	48.3
Strongly Agree	45	51.7	100.0
Total	87	100.0	

Table 12: Frequency table for question no. 12 “People do not like to wear smelly lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Agree	47	54.0	54.0
Strongly Agree	40	46.0	100.0
Total	87	100.0	

Table 13: Frequency table for question no. 13 “Lifejacket should be wear only by persons who do not know how to swim”

Scale	Frequency	Percent	Cumulative Percent
Disagree	9	10.3	10.3
Undecided	31	35.6	46.0
Agree	35	40.2	86.2
Strongly Agree	12	13.8	100.0
Total	87	100.0	

Table 14: Frequency table for question no. 14 “People think that wearing lifejacket would drop the masculine and manhood image.”

Scale	Frequency	Percent	Cumulative Percent
Disagree	4	4.6	4.6
Undecided	7	8.0	12.6
Agree	60	69.0	81.6
Strongly Agree	16	18.4	100.0
Total	87	100.0	

Table 15: Frequency table for question no. 15 “High confident in swim-ability would cause user reluctant to wear lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Undecided	18	20.7	20.7
Agree	56	64.4	85.1
Strongly Agree	13	14.9	100.0
Total	87	100.0	

Table 16: Frequency table for question no. 16 “The price of quality lifejacket is expensive”

Scale	Frequency	Percent	Cumulative Percent
Undecided	8	9.2	9.2
Agree	47	54.0	63.2
Strongly Agree	32	36.8	100.0
Total	87	100.0	

Table 17: Frequency table for question no. 17 “I can’t afford to buy the quality lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Disagree	1	1.1	1.1
Undecided	17	19.5	20.7
Agree	68	78.2	98.9
Strongly Agree	1	1.1	100.0
Total	87	100.0	

Table 18: Frequency table for question no. 18 “My unstable income not permit to buy lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Undecided	1	1.1	1.1
Agree	47	54.0	55.2
Strongly Agree	39	44.8	100.0
Total	87	100.0	

Table 19: Frequency table for question no. 19 “Lack of awareness on the importance of using lifejacket had caused people do not prefer to use it”

Scale	Frequency	Percent	Cumulative Percent
Undecided	32	36.8	36.8
Agree	53	60.9	97.7
Strongly Agree	2	2.3	100.0
Total	87	100.0	

Table 20: Frequency table for question no. 20 “I only wear lifejacket during emergency and rough sea”

Scale	Frequency	Percent	Cumulative Percent
Undecided	1	1.1	1.1
Agree	64	73.6	74.7
Strongly Agree	22	25.3	100.0
Total	87	100.0	

Table 21: Frequency table for question no. 21 “Lack of enforcement by the authority on the usage of lifejacket”

Scale	Frequency	Percent	Cumulative Percent
Disagree	6	6.9	6.9
Undecided	11	12.6	19.5
Agree	55	63.2	82.8
Strongly Agree	15	17.2	100.0
Total	87	100.0	

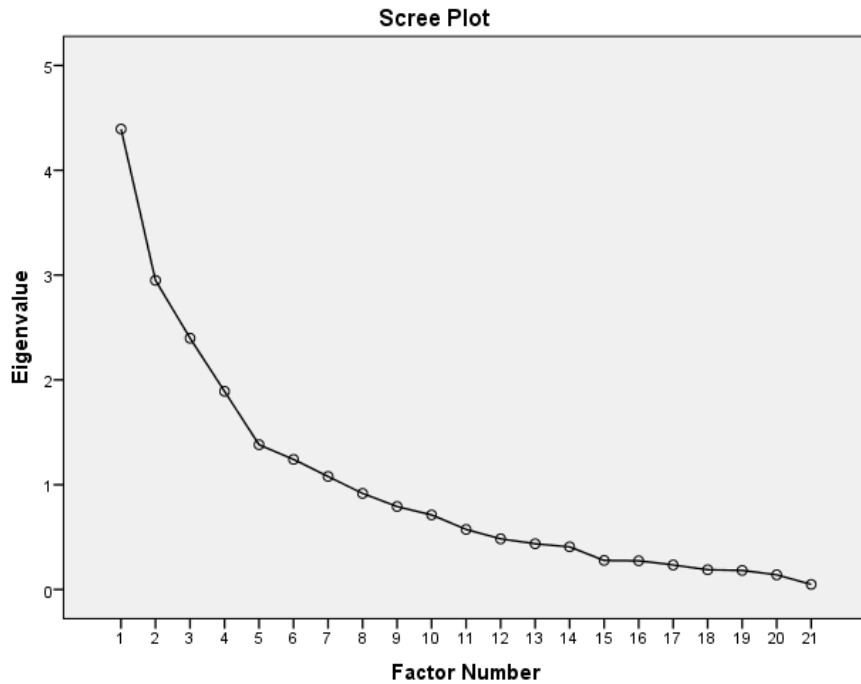


Figure 2: Scree plot graph

A scree plot is a plot of the eigenvalues against the number of factors in order of extraction (Kothari, 2012; Piaw, 2011). The scree plot above shows the first four columns that depicts four factors. Starting from the fifth factor, the line is almost flat, depicts that each successive factor is accounting for decreasing amounts of the total variance. Therefore, the number of factors identified in this analysis is four.

Table 22 shows the result of factor analysis performed to all 21 statements. These statements were grouped into four factors. Table 22 contains the rotated factor loadings (factor pattern matrix), which represent both how the variables are weighted for each factor but also the correlation between the variables and the factor. During the analysis, values 0.3 and lower were filtered blank to remove the variable with low correlations and not meaningful.

Table 22: Factor Analysis of the response received

Rotated Factor Matrix^a				
Statements	Factor			
	1	2	3	4
No. 11: People do not like to use molded lifejacket	0.908			
No. 12: People do not like to wear smelly lifejacket	0.822			
No. 7: I feel uncomfortable wearing lifejacket	0.651			
No. 5: Using lifejacket may cause difficulty to user to move freely on boat or ship.	0.509			
No. 10: People do not like to use worn-out lifejacket	0.466			
No. 1: Thick lifejacket may cause user to sweat heavily				
No. 19: Lack of awareness on the importance of using lifejacket had caused people do not prefer to use it		0.793		
No. 21: Lack of enforcement by the authority on the usage of lifejacket.		0.753		
No. 14: People think that wearing lifejacket would drop the macho and manhood image.		0.625		
No. 18: My unstable income not permit to buy lifejacket.				
No. 16: The price of the quality lifejacket is expensive.		0.555		
No. 4: Using vest type lifejacket that is tight may cause the user hard to breath.				
No. 17: I can't afford to buy the quality lifejacket.				
No. 15: High confident in swim-ability would cause user reluctant to wear lifejacket.			-0.892	
No. 13: "Lifejacket should be wear only by persons who do not know how to swim"			0.506	
No. x: I only wear lifejacket during emergency and rough sea.			0.453	
No. x: Difficult to seat comfortably on boat when wearing vest type lifejacket				
No. 8: lifejackets are heavy and not streamline with body, thus limiting movement"				0.767
No. 2: Lifejacket not suitable to wear during noon time				0.576
No. 6: wearing lifejacket limits movement				0.417
No. 3: Type of material used to construct lifejacket cause heat to be trapped between body and lifejacket.				

The four factors identified in Table 22 are named as shown in Table 23 according to group of related variable/category.

Table 23: Factor Analysis of the response received

Factor 1: Condition of Lifejacket.	Moldy; smelly; restless; and worn-out
Factor 2: Awareness on wearing lifejacket.	Lack of awareness campaign; lack of enforcement; not masculine /macho; and expensive
Factor 3: Swim-ability	high confidence in swim ability; wear during emergency; and wear by non-competence swimmer
Factor 4: Uncomfortable	limits movement; noon-time; and movement difficulties

Conclusion

The respondents agree that lifejacket limits movement, uncomfortable to wear, hot to wear in the hot and humid climate and drop the masculine image. The respondents also agree on refuse to wear the bad condition lifejacket. There are four factors verified by the factor analysis, which related to under utilize of lifejacket as follows: condition of lifejacket, awareness on using lifejacket, swim-ability and uncomfortable.

References

- Ahmad Fuad, A. F., Abd Kader, A. S., Ahmad, M. Z., & Abdul Malik, A. (2014). The Study to Propose Life Jacket Provision Index Static Model for the Assessment of the Provision of Life Jacket On Board Coastal Passenger Vessel. *Journal of Applied Science and Agriculture*, 9(18), 185–189.
- Chris Ison Rockfishing. (2013, September 16). Fishermen have one of the most dangerous jobs in Australia. *Capricornia Newspapers Pty Ltd*. Sydney. Retrieved from <https://www.themorningbulletin.com.au>
- Elizabeth Barry. (2017). Australia's 10 most dangerous jobs. Retrieved July 11, 2017, from <https://www.finder.com.au/dangerous-jobs>
- Kothari, C. R. (2012). *Research Methodology: An introduction. Research Methodology: Methods and Techniques* (Vol. IX). <http://doi.org/Goddard, W. & Melville, S>.
- Likert, R. (1932). *A technique for the measurement of Attitudes*. New York: Columbia University Press.
- MMEA. (2013). *MMEA Laporan Tahunan 2013*. Putrajaya.
- MMEA. (2014). *MMEA Laporan Tahunan 2014*. Putrajaya.
- MMEA. (2015). *MMEA Laporan Tahunan 2015*. Putrajaya.
- Piaw, C. Y. (2011). *Kaedah Penyelidikan Buku 1* (2nd ed.). Kuala Lumpur: McGraw-Hill.
- Piaw, C. Y. (2012). *Asas Statistik Penyelidikan Buku 2* (2nd ed.). Kuala Lumpur: McGraw-Hill.